

Remarks

The Applicants have amended Claim 12 to recite that the layer (b) consists of (B) a semi-aromatic polyamide or a combination of a semi-aromatic polyamide and an additive. Support may be found in the Applicants' specification such as in paragraph [0058], for example. Entry into the official file is respectfully requested.

Claims 12, 13, 17, 19, 21, 22, 23, 27-29 and 33-37 stand rejected under 35 USC §112 as being indefinite. The Applicants note with appreciation the Examiner's helpful comments concerning layer (b). As noted above, the Applicants have amended independent Claim 12 with respect to layer (b) such that it now consists of (B) a semi-aromatic polyamide or a combination of a semi-aromatic polyamide and the additive. Withdrawal of the rejection is respectfully requested.

Claims 12-13, 15, 17, 21-23, 27-31 and 33-35 stand rejected under 35 USC §103 over a hypothetical combination of Nishi JP with Nishi. The Applicants note with appreciation the Examiner's helpful comments hypothetically applying the combination against those claims. The Applicants nonetheless respectfully submit that even if one skilled in the art were to make the hypothetical combination, the result of that combination would still be a structure of that claimed by the Applicants. Reasons are set forth below.

The Applicants' Claim 12 recites a component (B) including a semi-aromatic polyamide comprising a dicarboxylic acid unit containing a terephthalic acid unit in a proportion of about 50 mol% or more based on all dicarboxylic acid units and a diamine unit containing a 1,9-nonanediamine and/or 2-methyl-1,8-octanediamine unit in a proportion of about 60 mol% or more based on all diamine units. This is referred to as "PA9T." Component (B) also includes a semi-aromatic polyamide comprising a dicarboxylic acid unit containing a naphthalenedicarboxylic acid unit in a proportion of about 50 mol% or more based on all dicarboxylic acid units and a diamine

unit containing a 1,9-nonanediamine and/or 2-methyl-1,8-octanediamine unit in a proportion of about 60 mol% or more based on all diamine units. This is referred to as PA9N. It is noted that 1,9-nonanediamine and 2-methyl-1,8-octanediamine have nine carbon atoms in the molecule, where T represents terephthalic acid and N represents naphthalenedicarboxylic acid.

The rejection states that Nishi discloses in Claims 1 and 2 and column 5, line 55 and column 6, line 65 polyamide resins including terephthalic acid and 1,9-nonanediamine. However, Nishi discloses “polyimide 12(a) and 12(b) that satisfies formula (3) and are polyamide resins showing an adhesive strength of at least 20N/cm to the inner layer.” Column 6, line 26 to column 7, line 7 of Nishi clearly states that: “the polyamide 12 (a) --- can be obtained by using 12-aminododecanoic acid and/or dodecane lactam as the main component and incorporating a polyfunctional monomer such as a diamine, --- a dicarboxylic acid”; “as the diamine, 1, 9-nonanediamine --- may, for example, be mentioned”; “as the dicarboxylic acid, terephthalic acid may, for example, be mentioned,” and “the amount of such a polyfunctional monomer is preferably from 0.2 to 10 mass %.”

Thus, the polyamide disclosed in Nishi is basically polyamide 12. Terephthalic acid and 1, 9-nonanediamine may be incorporated as a polyfunctional monomer in polyamide 12. However, the total amount thereof is quite small. It is only up to 10 mass%.

That polyamide is quite different from the Applicants’ claimed semi-aromatic polyamide (PA9T) comprising a dicarboxylic acid unit containing a naphthalenedicarboxylic acid unit in a proportion of about 50 mol% or more based on all dicarboxylic acid units and a diamine unit containing a 1,9-nonanediamine and/or 2-methyl-1,8-octanediamine unit in a proportion of about 60 mol% or more based on all diamine units.

Also, Nishi discloses an inner layer made of an ethylene/tetrafluoroethylene copolymer. However, that inner layer made of an ethylene/tetrafluoroethylene copolymer is different from the Applicants' layer (c) comprising (C) a fluorine-containing polymer having introduced into the molecular thereof at least one functional group consisting of a carboxy group, an acid anhydride group, a sulfonate group, an epoxy group, a cyano group and a carboxylic acid halide group. In sharp contrast, the Applicants' Claim 12 specifically combines a layer (a) comprising (A) polyamide 11, and/or polyamide 12, a layer consisting of (B) the semi-aromatic polyamide and a layer comprising (C) a fluorine-containing polymer, wherein the layer (b) is disposed between the layers (a) and (c). Thus, Nishi does not disclose those essential components of the Applicants' Claim 12.

The rejection turns to Nishi JP because of the acknowledged silence of Nishi with respect to the use of carboxylic anhydride groups used therein. The Applicants respectfully submit, however, that even if one skilled in the art were to look to Nishi JP and make the hypothetical combination as proposed in the rejection, the resulting structure would still be different because of the above-mentioned fundamental deficiencies of Nishi. In other words, the polyamides of Nishi would still remain completely different from those recited in the Applicants' independent Claim 12. The Applicants thus respectfully submit that the hypothetical combination does not apply to Claims 12-13, 15, 17, 21-23, 27-31 and 33-35. Withdrawal of the rejection is respectfully requested.

Claims 36 and 37 stand rejected under 35 USC §103 over the same hypothetical combination of Nishi JP with Nishi in paragraph [0013] of the Official Action. Apparently, this is an error. The Applicants believe that the rejection is intended to be a rejection over the further hypothetical combination of Audenaert with Nishi JP and Nishi. Confirmation is respectfully requested. The Applicants will nonetheless respond accordingly. The Applicants nonetheless respectfully submit

that Audenaert fails to cure the deficiencies set forth above with the fundamental combination of Nishi JP with Nishi. Withdrawal of that rejection is also respectfully respected.

Claims 12-13, 17, 21-23, 27-28 and 31 stand rejected under 35 USC §103 over a hypothetical combination of Shimizu and Oka and Nishi with Stoeppelmann. The Applicants note with appreciation the Examiner's detailed comments hypothetically applying those combinations against Claims 12-13, 17, 21-23, 27-28 and 31. The Applicants nonetheless respectfully submit that the combination would result in a structure that is different from what the Applicants claim. Reasons are set forth below.

The rejection states that a polyamide intermediate layer can be PA6T, where T is a terephthalic acid, as well as the addition of dodecyl or decyl diamines (page 6, paragraph 20 of the Office Action). The rejection also states that Stoeppelmann discloses that the diamine may be added, but is not required (column 4, lines 19-27) and, as such, Stoeppelmann teaches embodiments that consist of the polyamide.

However, the diamine is an essential component of the intermediate layer as disclosed in the Abstract, Claim 1, and column 2, lines 53-65 of Stoeppelmann. Not only Claim 1 and the Abstract, but also column 2, lines 53-65 state that the diamine, in addition to a polyamide having an excess of amino end groups, are essential components of the adhesion promoter composition in Stoeppelmann. But, Stoeppelmann excludes an adhesion promoter composition which does not contain a diamine in the polyamide intermediate layer.

The rejection points to column 4, lines 19-26 of Stoeppelmann from the teachings that the diamine may be added, but is not required, and describes the reason for excluding an adhesion promoter composition which does not contain a diamine in the polyamide intermediate layer, in that if polyamide 12 is used without a diamine, adequate adhesion cannot be achieved. Thus, column 4,

lines 19-26 does not teach that the diamine may be added, but is not required. Hence, the diamine is an essential component in the intermediate layer in Stoepplemann. Therefore, the rejection is in error.

In sharp contrast, the Applicants' layer (b) consists of (B) a semi-aromatic polyimide or a combination of (B) a semi-aromatic polyamide and a specified additive. This structure, as claimed, excludes incorporation of a diamine. Further, columns 3 and 4 of Stoepplemann describe many examples of polyamides used, but PA9T or PA9N is not disclosed. Although the rejection identifies PA6T, PA6T is not PA9T. Stoepplemann specifically discloses PA6T, PA10T and PA12T, but does not disclose PA9T.

Still further, the Applicants' semi-aromatic polyamide (PA9T) comprises a dicarboxylic acid unit containing a terephthalic acid unit in a proportion of about 50 mol% or more based on all dicarboxylic acid units and a diamine unit containing a 1,9-nonanediamine and/or 2-methyl-1,8-octanediamine unit in a proportion of about 60 mol% or more based on all diamine units. However, Stoepplemann does not disclose this combination of the specific dicarboxylic acid unit and diamine unit.

Stoepplemann also discloses fluoropolymer comprising units selected from the group consisting of TFE, HEP, VDF and PMVE. However, this fluoropolymer is different from the Applicants' (C) a fluorine-containing polymer having introduced into the molecular chain thereof at least one functional group consisting of a carboxy group, an acid anhydride group, a sulfonate group, an epoxy group, a cyano group and a carboxylic acid halide group.

In sharp contrast, the Applicants' specifically combine a layer (a) comprising (A) polyamide 11 and/or polyamide 12, a layer consisting of (B) the semi-aromatic polyamide and a layer comprising (C) a fluorine-containing polymer, wherein the layer (b) is disposed between the layers

(a) and (c). Thus, Stoepplemann does not disclose essential components of the Applicants' Claim 12.

There are additional problems with Stoepplemann. For example, the rejection frankly acknowledges that Stoepplemann is silent with respect to the functional groups added to the fluoropolymer. Thus, the rejection turns to Shimizu for those teachings as well as Oka and Nishi JP. The Applicants respectfully submit, however, that all of Shimizu, Oka and Nishi fail to cure the deficiencies set forth above with respect to Stoepplemann. Thus, the combination would still fail to result in the Applicants' claimed structure. For example, the rejection states that the polyamide used in the polyamide intermediate layer of Stoepplemann may be replaced with the polyamide composition disclosed in Oka and such a replacement is motivated because the polyamide composition of Oka has superior moldability, heat resistance and mechanical characteristics.

However, even if the polyamide in the polyamide intermediate layer of Stoepplemann is replaced with the polyamide composition disclosed in Oka, the obtained polyamide intermediate layer is different from the Applicants' claimed layer (b) since the polyamide intermediate layer of Stoepplemann must contain a diamine as an essential component, which is excluded from the Applicants' layer (b). The Applicants therefore respectfully submit that the combination is inapplicable to Claims 12-13, 17, 21-23, 27-28 and 31. Withdrawal of the rejection is respectfully requested.

Claims 12-13, 17, 21-23, 27-28, 31, 36 and 37 stand rejected under 35 USC §103 over the hypothetical combination of Audenaert, Oka, and Nishi with Stoepplemann. The Applicants respectfully submit, however, that all of Audenaert, Oka and Nishi fail to cure the deficiencies set forth above with respect to Stoepplemann. Withdrawal of the rejection is respectfully requested.

Claims 19 and 29 stand rejected under 35 USC §103 over the hypothetical combination of Shimizu, Oka, Nishi JP and Krause with Stoepplemann. The Applicants respectfully submit that all of Shimizu, Oka, Nishi JP and Krause fail to cure the deficiencies set forth above with respect to Stoepplemann. Withdrawal of the rejection is respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'TDC', is positioned above the printed name of the attorney.

T. Daniel Christenbury
Reg. No. 31,750
Attorney for Applicants

TDC/vp
(215) 656-3381